

REMARKS

Claims 1-4, 11-14, and 21 have been amended. Claims 1-28 remain in the application. Further examination and reconsideration of the application is hereby requested.

In Section 4 of the Office Action, the Examiner rejected claims 1, 2, 5-9, 11, 12, 15-19, 21-24, 27 and 28 under 35 USC 103(a) as being obvious over Hess in view of Burke et al. and Matta. Applicants respectfully traverse this rejection.

However, to prevent a long and costly appeal, Applicants have amended independent claims 1, 11, and 21 to more particularly define and clarify their invention over the art made of record. Applicants believe their claimed invention as amended is not disclosed, taught, or suggested by the art made of record.

When considering Applicants' *invention as a whole*, combining Hess with Burke and Matta will not create Applicants' invention as claimed. For instance in claim 1, the Applicants are claiming an integrated circuit for a printhead that includes "a substrate without a grown field oxide layer" and "an ejection element ... wherein the ejection element is disposed over the substrate with an intervening dielectric layer." Both Hess and Burke disclose growing a field oxide layer on the substrate (Hess, col. 5 lines 5-17, Burke, col. 5, lines 59-60.) In fact, Burke uses this grown field oxide layer to create the additional pocket boron implant step (col. 5, line 60 – col. 6 lines 14) by diffusing the boron into the substrate. Further, Burke discloses adding an additional process step to a conventional process (col. 5, line 49-51). Conversely, by eliminating the grown field oxide layer, Applicants are able to remove several process steps and the use of a island mask (page 5, line 31- page 6, line 12). Additionally, Matta discloses the ejection element suspended over an opening in the substrate (see Fig. 11). Applicants have amended claims 1, 11 and 21 to make it clear that a dielectric layer is intervening in between the ejection element and the substrate. By doing so, the Applicants have created a similar (albeit novel) structure for the ejection element with respect to the prior art (compare Applicants' Fig. 1 to Fig. 2) with significantly less process steps required to manufacture it. When both the claimed invention as a whole and the references as a whole are considered, the combination of Hess, Matta, and Burke do not create Applicant's claimed invention, as amended.

As MPEP 2143.01 states, "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination."

Consequently, it is this combination of a substrate without a grown field oxide layer with all transistors having formed closed loops and the element of “an ejection element . . . disposed over the substrate with an intervening dielectric layer” that creates a unique structure that is not disclosed, taught, or suggested by Hess, Burke, or Matta alone or in combination. This structure allows for eliminating a masking step in the manufacture of the integrated circuit which reduces cost and increases reliability. As stated in Ex parte Hiyamizu, 10 USPQ.2d 1393, 1394-95 (BPAI 1988) “it is well settled that where the claimed invention solves a problem (e.g. how to reduce masking steps) , the discovery of the problem and its solution (e. g. the claimed structure) are considered to be part of the ‘invention as a whole’ under 35 USC 103.” Having each of the transistors formed with a closed loop structure in a substrate without a grown field oxide layer allows the Applicants printhead to have an ejection element disposed over the substrate with an intervening dielectric layer while corresponding allowing for the elimination of a masking step rather than requiring new steps such as with Burke. Accordingly, withdrawal of rejection under 35 USC 103(a) for claims 1, 1, and 21 and their allowance is respectfully requested.

Dependent claims 2, and 5-9 depend directly or indirectly on claim 1 and are thus deemed patentable based at least on the patentability of claim 1. Claims 12 and 15-19 depend directly or indirectly on claim 11 and are deemed patentable based at least on the patentability of claim 11. Claims 2-4 and 12-14 have been amended to correct antecedent basis due to the amendments made to claims 1 and 11, respectively. Claims 22-24, 27, and 28 depend directly or indirectly on claim 21 and are deemed patentable based at least on the patentability of claim 21. Withdrawal of the rejection under 35 USC 103(a) and allowance of claims 2, 5-9, 12, 15-19, 22-24, 27 and 28 is respectfully requested.

In Section 5 of the Office Action, the Examiner rejected claims 3, 13, and 25 under 35 USC 103(a) as being obvious over Hess (‘812) in view of Burke, Matta, and Hess (‘477). Claims 3, 13, and 25 depend in part upon independent claims 1, 11, and 21, respectively, and are deemed at least patentable based on the patentability of their respective parent claims as discussed previously. Removal of this rejection and allowance of claims 3, 13, and 25 is respectfully requested.

In Section 6 of the Office Action, the Examiner rejected claims 4, 14, and 26 under 35 USC 103(a) as being obvious over Hess in view of Burke, Matta and Hawkins. Claims 4, 14, and 26 depend in part upon independent claims 1, 11, and 21, respectively, and are deemed at least patentable based on the patentability of their respective parent claims as discussed previously. Removal of this rejection and allowance of claims 4, 14, and 26 is respectfully requested.

In Section 7 of the Office Action, the Examiner rejected claims 10 and 20 under 35 USC 103(a) as obvious over Hess in view of Burke ('528), Matta and Burke ('386). Claim 10 depends indirectly upon claim 1 and claim 20 depends indirectly upon claim 11 and are both deemed patentable based at least on the patentability of their respective base claims as discussed previously. Removal of this rejection and allowance of claims 10 and 20 is respectfully requested.


The prior art made of record but not relied upon by the Examiner has been reviewed, but is no more pertinent to Applicants' invention than the cited references for the reasons given above.

Applicants believe their claims as amended previously are patentable over the art of record, and that the amendments made to date are within the scope of a search properly conducted under the provisions of MPEP 904.02. Accordingly, claims 1-28 are deemed to be in condition for allowance, and such allowance is respectfully requested.

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